| FORM PTO-1390(Modified) (REV.11-2000)    U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE | ATTORNEY'S DOCKET NUMBER |
|---|---|
| TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371 | 112740-343 |
| | U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR) 09/937,877 |

| INTERNATIONAL APPLICATION NO. PCT/DE00/00979 | INTERNATIONAL FILING DATE 31 March 2000 | PRIORITY DATE CLAIMED 31 March 1999 |
|---|---|---|

TITLE OF INVENTION
**METHOD FOR TRANSMITTING DATA BETWEEN MEMBERS OF AN OPERATOR SERVICE**

APPLICANT(S) FOR DO/EO/US
**Wahid Adli**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☐ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. ☒ This is a **SECOND or SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.

4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).

5. ☐ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
   - b. ☐ has been communicated by the International Bureau.
   - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).

6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   - a. ☐ is attached hereto.
   - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).

7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   - b. ☐ have been communicated by the International Bureau.
   - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   - d. ☐ have not been made and will not be made.

8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).

10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).

12. ☐ A copy of the International Search Report (PCT/ISA/210).

**Items 13 to 20 below concern document(s) or information included:**

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

15. ☐ A **FIRST** preliminary amendment.

16. ☐ A **SECOND or SUBSEQUENT** preliminary amendment.

17. ☐ A substitute specification.

18. ☐ A change of power of attorney and/or address letter.

19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.

20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).

21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).

22. ☒ Certificate of Mailing by Express Mail

23. ☐ Other items or information:

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01/15/2002 MNGUYEN  00000153 09937877
01 FC:154                    130.00 OP
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PCTUS1/REV03

| FORM PTO-1390 (Modified) (REV 11-98) | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE | ATTORNEY'S DOCKET NUMBER |
|---|---|---|
| TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371 | | **112740-343** |
| | | U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR **09/937877** |

| INTERNATIONAL APPLICATION NO. **PCT/DE00/0979** | INTERNATIONAL FILING DATE **31 March 2000** | PRIORITY DATE CLAIMED **31 March 1999** |
|---|---|---|

TITLE OF INVENTION

**METHOD FOR TRANSMITTING DATA BETWEEN MEMBERS OF AN OPERATOR SERVICE**

APPLICANT(S) FOR DO/EO/US

**Wahid Adli**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).

4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))

    a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).

    b. ☐ has been transmitted by the International Bureau.

    c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).

6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).

7. ☒ A copy of the International Search Report (PCT/ISA/210).

8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))

    a. ☒ are transmitted herewith (required only if not transmitted by the International Bureau).

    b. ☐ have been transmitted by the International Bureau.

    c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.

    d. ☐ have not been made and will not be made.

9. ☒ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).

11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).

12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

**Items 13 to 20 below concern document(s) or information included:**

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15. ☒ A **FIRST** preliminary amendment.

16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.

17. ☒ A substitute specification.

18. ☐ A change of power of attorney and/or address letter.

19. ☒ Certificate of Mailing by Express Mail

20. ☒ Other items or information:

> Submission of Drawings Figure 1 on one sheet.

        PCTUS1/REV03

| U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR **09/937877** | INTERNATIONAL APPLICATION NO. **PCT/DE00/0979** | ATTORNEY'S DOCKET NUMBER **112740-343** |
|---|---|---|

| 21. The following fees are submitted:. | CALCULATIONS   PTO USE ONLY |
|---|---|

**BASIC NATIONAL FEE ( 37 CFR 1.492 (a) (1) - (5)) :**

☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO and International Search Report not prepared by the EPO or JPO . . . . . . . . . . . **$1,000.00**

☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but Internation Search Report prepared by the EPO or JPO . . . . . . . . . **$860.00**

☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO . . . . . . . . . . . . **$710.00**

☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) . . . . . . . . . . . . **$690.00**

☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) . . . . . . . . . **$100.00**

| **ENTER APPROPRIATE BASIC FEE AMOUNT =** | **$890.00** | |
|---|---|---|

| Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20  ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)). | **$0.00** | |
|---|---|---|

| CLAIMS | NUMBER FILED | NUMBER EXTRA | RATE | | |
|---|---|---|---|---|---|
| Total claims | 7  - 20 = | 0 | x  $18.00 | **$0.00** | |
| Independent claims | 1  - 3 = | 0 | x  $80.00 | **$0.00** | |
| Multiple Dependent Claims **(check if applicable)**. | | ☐ | | **$0.00** | |
| **TOTAL OF ABOVE CALCULATIONS** | | | **=** | **$890.00** | |
| Reduction of 1/2 for filing by small entity, if applicable.  Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) **(check if applicable)**. | | ☐ | | **$0.00** | |
| | | **SUBTOTAL** | **=** | **$890.00** | |
| Processing fee of **$130.00** for furnishing the English translation later than ☐ 20  ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). | | | **+** | **$0.00** | |
| **TOTAL NATIONAL FEE** | | | **=** | **$890.00** | |
| Fee for recording the enclosed assignment (37 CFR 1.21(h)).  The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable)**. | | ☐ | | **$0.00** | |
| **TOTAL FEES ENCLOSED** | | | **=** | **$890.00** | |

| | Amount to be: refunded | $ |
|---|---|---|
| | charged | $ |

☒ A check in the amount of **$890.00**   to cover the above fees is enclosed.

☐ Please charge my Deposit Account No.   in the amount of   to cover the above fees.
   A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment
   to Deposit Account No.   **02-1818**   A duplicate copy of this sheet is enclosed.

**NOTE:  Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.**

SEND ALL CORRESPONDENCE TO:

**William E. Vaughan (Reg. No. 39,056)**
**Bell, Boyd & Lloyd LLC**
**P.O. Box 1135**
**Chicago, Illinois  60690**

SIGNATURE

**William E. Vaughan**
NAME

**39,056**
REGISTRATION NUMBER

**October 1, 2001**
DATE

BOX PCT

IN THE UNITED STATES ELECTED/DESIGNATED OFFICE

OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER THE PATENT COOPERATION TREATY-CHAPTER II

5                                    **PRELIMINARY AMENDMENT**

| | |
|---|---|
| APPLICANT: | DOCKET NO: 112740-343 |
| SERIAL NO: | GROUP ART UNIT: |
| | EXAMINER: |
| INTERNATIONAL APPLICATION NO: | PCT/DE 00/00979 |
| 10   INTERNATIONAL FILING DATE: | 31 MARCH 2000 |

INVENTION:       METHOD FOR TRANSMITTING DATA TO MEMBERS
OF AN OPERATOR SERVICE

Assistant Commissioner for Patents,
15   Washington, D.C. 20231

Sir:

Please amend the above-identified International Application before entry

into the National stage before the U.S. Patent and Trademark Office under 35

20   U.S.C. §371 as follows:

**In the Specification:**

Please replace the Specification of the present application, including the

Abstract, with the following Substitute Specification:

SPECIFICATION

25                          TITLE OF THE INVENTION

METHOD FOR TRANSMITTING DATA TO

MEMBERS OF AN OPERATOR SERVICE

BACKGROUND OF THE INVENTION

The present invention relates to a method for managing operators of a

30   telecommunications network which are members of an operator service; the

telecommunications network having switching offices and after an operator has

logged on to its home switching office in a data channel, the operator logs on to the peripheral line trunk group (LTG) of the operator via the data channel.

Operator services which constitute an essential link between the customers of the network and the network operators are required in telephone networks. Such
5 an operator service has diverse functions, one function can be to distribute information to subscribers on request. For example, a subscriber may call an operator service in an ISDN network and request information. The respective operator can then, if necessary, access a database, in which case information relating to another subscriber is then provided the operator on the screen of a PC.
10 After a connection request by the operator, which can be effected by pressing a push-button key, the operator is connected to the searched-for subscriber. The operator is then connected back to the originating subscriber and to the searched-for subscriber and can optionally speak to one of the subscribers. Signaling on the D channel then takes place again at the push of a further push-button key, and the
15 connection situations of the two subscribers of the peripheral line connecting group are indicated. The call channels are then connected via the switching matrix so that ultimately there is a direct link between the two subscribers. The example described here represents just one of the possibilities or functions of an operator service.
20 Large networks for a large number of subscribers require a correspondingly large number of operator service systems with a large number of generally hierarchically structured system subscribers (operators), for example, the Applicant's system which is called ADMOSS. Messages from the operators to the switching office are sent, as previously mentioned, via the D channel in an ISDN
25 network, specifically in a point-to-point configuration with a permanently active layer 2 of the OSI layer model. The messages are transmitted in an ISDN network with the support of the D channel protocol, for which reason, reference is made to the Blue Book, Volume VI - Fascicle VI. 11, "Digital Subscribe Signaling System No. 1 (DSS1), Network Layer, User-Network Management," Recommendations
30 Q. 930 - Q. 940, in particular to recommendation Q. 931.

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The operators are generally located in call centers, and a respective device, which can be a terminal, PC, screen etc. and referred to as "Console", is directly connected to the system and/or can be connected to the local switching office. However, the need to use decentralized operators, for example, within the context

5    of homework, is being increasingly felt, but a single central management system for the operators in the network should still be possible.

Similar issues relating to operators are also described in U.S. Pat. No. 5,012,512. The solution described in the present invention to shorten the time expended is not only capable of displaying and processing the requested data of a

10   subscriber on the screen of the operator, but also data which the operator obtained on request from one or more databases.

U.S. Pat. No. 5,469,504 describes a call distributor system having a host computer together with a database which is physically connected to all the switching offices, and serves as a system for switching the data between the

15   individual switching offices to which operators of an operator service are connected. In the system, a call link is first offered to an operator via the local switching office, if the operator is not suitably located for this call, this call is transferred to a further operator using the host computer, this transfer being made using a special protocol, referred to as "intertandem protocol." This protocol uses a

20   DTMF method. The expenditure incurred as a result of the use of the host computer in conjunction with the X.25 interface protocol, described in U.S. Pat. No. 5,469,504, and the intertandem protocol is, however, considered to be disadvantageous.

## SUMMARY OF THE INVENTION

25   An advantage of the present invention is that it permits network-wide management of all the operators or consoles of the operator system. For example, a central switching office, referred to as master office, would have information indicating which operators are free or busy or out of service so that an inquiry of a network subscriber relating to a telephone number, address, etc., can quickly be

30   passed on to an operator at a remote switching office. If no operator at the local

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switching office is available. This, thus, permits network-wide call distribution in terms of the operators.

This advantage is achieved by the present invention. In the present invention, after successful logging on, a request for remote logging on to a central master office is transmitted, a call number or call number table of virtual operators located in the master office is transmitted from the peripheral line trunk group to the operator, the operator initiates a voice link to a virtual operator using the call number or call number table, and, after the call link has been successfully set up, the request for remote logging on is transmitted from the home switching office to the master office via inter-office signaling, and is conveyed in the master office to its coordination processor. Log on confirmation data and data which is specific to the operator service is then loaded from the coordination processor and/or a peripheral line trunk group of the master office into the peripheral line trunk group of the operator in the home switching office and from there into the operator's terminal, and a status report of the operator is transmitted via a data channel to the peripheral line trunk group of the home switching office and from there via inter-office signaling to the coordination processor of the master office.

Because of the present invention, an operator system which operates on a network-wide basis and managed centrally can be provided. The present invention is more expedient because it provides a saving in resources if the local logging on to the home switching office is terminated after the remote logging on of the operator to the master office.

In order to facilitate the operator work, there is a provision that the status report is not output until the expiration of a protection time which follows the successful remote logging on.

It is expedient if the data to be transmitted is transmitted from the peripheral line trunk group of the master office to the operator via a data channel other than the voice channel, this constituting the customary possibility for the transmission of data, which is also provided in the network in accordance with regulations.

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Because a voice link is set up in accordance with the present invention, it may also be expedient if data is transmitted via a voice channel set up between the operator and a virtual operator using a data link program.

The present invention is particularly suitable for application in an ISDN
5   network, the data channel being the D channel, and the voice channels being B channels.

Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

10                BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows the basic structure of a network with two switching offices and an operator service.

DETAILED DESCRIPTION OF THE INVENTION

At the top left of Figure 1 there are a number of subscribers OP1, OP2 ... of
15   an operator service OPS, details of the hierarchy within the operators OP1, OP2 ... are not being given here. All the operators OP1, OP2 ..., are connected into the network together with customary network subscribers TEI of a telecommunications network NET. The network in the present case is an ISDN network and the connection is made via an $S_0$ interface, i.e., in each case to a network terminal NTE.

20   The first switching office, VS1, of the network is shown top right and it has, in a manner known per se, a switching matrix, SNE, and periphery line trunk groups LTG, LTC connected thereto. A coordination processor, COP, is provided for controlling the switching office VS1, including the switching matrix SNE. Each peripheral line trunk group LTG, LTC also contains, in a known manner, a
25   group processor GRP, and in this embodiment concentrators DLU (Digital Line Unit) are connected to each peripheral line trunk group via a $U_{k0}$ interface. Each of these concentrators DLU have inputs for the network terminals already mentioned above. In the case of relatively large switching offices, up to 512 peripheral line trunk groups LTG, LTC can be connected to a switching matrix SNE, and usually
30   two concentrators DLU are connected to each line trunk group LTG. The

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peripheral line trunk groups LTG, LTC each also contain, in a known manner, a group switch GSI.

In a peripheral line trunk group LTG, LTC, various programs are executed which are supported by the group processor GRP, for example, the greater part of
5    the connection setup, the signaling, the code reception etc., takes place here. In general, 70% of the connection setup is carried out in the peripheral line trunk groups, whereas routing functions are assigned to the coordination processor COP.

The switching office can also include an operation and maintenance system OMS with an operation and maintenance terminal OMT at which monitoring
10   personnel can continuously monitor the state of the switching office and detect faults.

The operators OP1, OP2 ... of the operator service usually have workstations with personal computers which contain ISDN cards and special software as well as headsets for the operators. The terminals of the operators are
15   also called "consoles" in the following. The operators OP1, OP2, ... can transmit messages to the switching office, including the peripheral line trunk groups LTG. These messages are processed in the group processor GRP and lead to further corresponding measures, for example a connection setup. The messages are transmitted in a point-to-point configuration with a permanently active layer 2 and
20   in the D channel in an ISDN network.

Bottom right in Figure 1 there is a further switching office VS2 which is associated with the network NET and whose structure corresponds basically to the first switching office VS1, but the second switching office VS2 serves as a master office of the operator service. It can be appreciated that a large number of other
25   switching offices (not shown here) may also be provided as a function of the size of the network, as indicated in Figure 1 by two boxes VS3, VS4.

Each of these switching offices can be assigned operators $OP_x$, $OP_y$ again.

Each switching office VS1, VS2,... has a particular peripheral line trunk group LTC for fast data links which permit data exchange within the scope of inter-
30   office signaling, for example in the ISUP signaling system (see P. Bocker, ISDN

Digitale Netze für Sprach, Text, Daten, Video and Multimediakommunikation ("Digital Networks for Call, Text, Data, Video and Multimedia communication"), 4th Edition, Springer (Publishing house), Section 6.2.9, "Zwischenamtsignalisierung" ("Inter-office signaling"), with other such line trunk

5    groups via rapid data links, for example optical fiber lines.

In the present invention, any operator OP1, OP2, ... can log on to a remote office, here the master office VS2. The present invention provides a method which is described below in more detail.

An operator OP1 first logs on to his home switching office VS1 by using a

10    password and an ID number which corresponds to the prior art. After successful logging on, the console of the operator OP1 transmits a request for remote logging on in the master office VS2 to the associated peripheral line trunk group LTG of the home switching office VS1 in the D channel via a data link. This request then causes a call number or a call number table of virtual operators VO1, VO2 to be

15    transmitted to the console of the operator OP1.

Such virtual operators are configured in at least one peripheral line trunk group LTG of the master office VS2, and are required to be able to set up an actual call link.

The console of the operator OP1 then uses the call number or one of the

20    possible call numbers in order to set up a call link, i.e., a link in a B channel to a virtual operator VO1. After successful setting up of this link, the request for remote logging is transmitted via inter-office signaling from the switching office of the operator OP1 to the master office VS2 and conveyed to the coordination processor COP in the master office VS2. In the next step, "log on response" data and call

25    number data (for example, system clock time and date, the hierarchical structure, personal data and different rights, i.e., access possibilities to statistical data, etc.) are loaded from the coordination processor COP and/or a peripheral line trunk group LTG of the master office VS2 into the peripheral line trunk group LTG of the operator OP1 in the home switching office VS1, or from here into the operator

30    console. This can be carried out via a data channel (D channel) or via the existing

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call link in a B channel using a data link program. After determination of this data transmission, the "log-off" is initiated with respect to the "local" log on between the operator OP1 and home switching office VS1.

However, if the voice link has not been established in the B channel

5 between the operator console and the virtual operator VOP, the next call number of a virtual operator is obtained from the aforesaid call number table by the console and a new link attempt is started.

After a successful log on in the master office VS2 takes place, soon after a certain protection time has expired which is implemented via a post-call timer, a

10 status message (operator status message), in this case "idle" is transmitted from the console of the operator OP1 via a data channel link to the peripheral line trunk group LTG of the home switching office VS1. From here, the status message (here "idle") is transmitted to the master office VS2 using inter-office signaling, for example, ISUP, and transmitted to the coordination processor COP. The aforesaid

15 protection time of, for example, 20 to 60 s, permits the line of the operator OP1 to appear seized or busy and is intended to prevent the operator OP1 from being "overloaded" by an enquiry virtually simultaneously with its log on.

Status changes of the operator OP1, such as, from "idle" to "busy", are handled in the same way and are therefore known in the master office VS2.

20 The present invention makes possible a network-wide operator service system in which operators of remote offices can be integrated into the work of this system by virtue of the central management of the system carried out at an office (switching office).

Although the present invention has been described with reference to specific

25 embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the invention as set forth in the hereafter appended claims.

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initiating a voice link to one of the virtual operators, by the operator, using the call number or the call number table;

transmitting the request for remote logging on from the home switching office to the master office via inter-office signaling, after the voice link has been successfully set up;

conveying the request for remote logging on, in the master office, to a coordination processor;

loading from at least one of the coordination processors and the peripheral line group of the master office, the log on confirmation data and data which is specific to the operator service, into the peripheral line trunk group of the operator in the home switching office;

loading the log on confirmation data and the data which is specific to the operator service to the operator's terminal from the peripheral line trunk group of the operator in the home switching office;

transmitting, via a data channel, a status report of the operator to the peripheral line trunk group of the home switching office; and

transmitting the status report of the operator to the coordination processor of the master office from the peripheral line trunk group of the home switching office via inter-office signaling.

9.    A method for managing operators of a telecommunications network as claimed in claim 8, the method further comprising the step of:

terminating the local logging on to the home switching office after the remote logging on of the operator to the master office.

10.    A method for managing operators of a telecommunications network as claimed in claim 8, wherein the status report is not output until after a protection time following the remote logging on has expired.

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11.     A method for managing operators of a telecommunications network as claimed in claim 8, wherein data to be transmitted is transmitted from the peripheral line trunk group of the master office to the operator via a channel other than a voice channel.

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12.     A method for managing operators of a telecommunications network as claimed in claim 8, wherein data to be transmitted is transmitted via a voice channel set up between the operator and one of the virtual operators using a data link program.

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13.     A method for managing operators of a telecommunications network as claimed in claim 8, wherein the communications network is an ISDN network, the data channel is a D channel and voice channels are B channels.

15     14.     A method for managing operators of a telecommunications network as claimed in claim 8, wherein the inter-office signaling system is an ISUP signaling system.

## R E M A R K S

The present amendment makes editorial changes and corrects typographical
20   errors in the specification, which includes the Abstract, in order to conform the specification to the requirements of United States Patent Practice. No new matter is added thereby. Attached hereto is a marked-up version of the changes made to the specification by the present amendment. The attached page is captioned "**Version With Markings To Show Changes Made.**"

25     In addition, the present amendment cancels original claims 1-7 in favor of new claims 8-14. Claims 8-14 have been presented solely because the revisions by crossing out and underlining which would have been necessary in claims 1-7 in order to present those claims in accordance with preferred United States Patent Practice would have been too extensive, and thus would have been too burdensome.
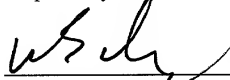30     The present amendment is intended for clarification purposes only and not for

11

substantial reasons related to patentability pursuant to 35 U.S.C. §§103, 102, 103 or

112. Indeed, the cancellation of claims 1-7 does not constitute an intent on the part

of the Applicants to surrender any of the subject matter of claims 1-7.

Early consideration on the merits is respectfully requested.

5

Respectfully submitted,

_____ (Reg. No. 39,056)

William E. Vaughan

10

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(312) 807-4292

Attorneys for Applicant

12

SPECIFICATION

TITLE OF THE INVENTION

5        METHOD FOR TRANSMITTING DATA TO

MEMBERS OF AN OPERATOR SERVICE

~~Description~~

~~Method for transmitting data to members of an operator service~~

BACKGROUND OF THE INVENTION

10       The present invention relates to a method for managing operators of a

telecommunications network which are members of an operator service~~,~~: the

telecommunications network having ~~a plurality of~~ switching offices~~,~~ and~~,~~ after an

operator has logged on to its home switching office in a data channel, the operator

logs on to the peripheral line trunk group (LTG) of the operator via the data

15   channel.

What are referred to as operator Operator services which constitute an

essential link between the customers of the network and the network operators are

required in telephone networks.  Such an operator service has diverse functions, one

~~main~~ function ~~being~~ can be to distribute information to subscribers on request.  For

20   example, ~~an operator~~ a subscriber may call an operator service in an ISDN network

and request information.  The respective operator can then, if necessary, access a

database, ~~for example,~~ in which case information relating to another subscriber is

then provided ~~to him~~ the operator on the screen of a PC.  After a connection request

by the operator, which can be effected~~, for example,~~ by pressing a push-button key,

25   the operator is connected to the searched-for subscriber.  The operator is then

connected back to the originating subscriber and to the searched-for subscriber and

can optionally speak to one of the subscribers.  Signaling on the D channel then

takes place again at the push of a further push-button key, and the connection

situations of the two subscribers of the peripheral line connecting group are

30   indicated~~, and the~~.  The call channels are then connected via the switching matrix so

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that ultimately there is a direct link between the two subscribers. The example described here ~~is intended to represent~~ represents just one of the possibilities or functions of an operator service.

5    Large networks for a large number of subscribers require a correspondingly large number of operator service systems with a large number of ~~usually~~ generally hierarchically structured system subscribers (operators), ~~such as,~~ for example, ~~as in the case of~~ the Applicant's system which is called ADMOSS. Messages from the operators to the switching office are sent, as ~~already~~ previously mentioned, ~~in~~ via the D channel~~,~~ in an ISDN network, specifically in a point-to-point configuration

10   with a permanently active layer 2 of the OSI layer model. The messages are transmitted in an ISDN network with the support of the D channel protocol, for which reason, reference is ~~also~~ made to the Blue Book, Volume VI - Fascicle VI. 11, "Digital Subscribe Signaling System No. 1 (DSS1), Network Layer, User-Network ~~Management",~~ Management," Recommendations Q. 930 - Q. 940, in

15   particular to recommendation Q. 931.

The operators are ~~usually~~ generally located in ~~what are referred to as~~ call centers, and a respective device, ~~composed of~~ which can be a terminal, PC, screen etc. and referred to ~~below, as is the usual practice, as~~ as "Console"~~,~~ is directly connected to the system and/or can be connected to the local switching office.

20   However, the need to use decentralized operators, for example, within the context of homework, is being increasingly felt, but a single central management system for the operators in the network should still be possible.

~~Objects and problems of~~ Similar issues relating to operators are also described in ~~a method of the type mentioned at the beginning in US-A-5 012 512, a~~

25   ~~solution being described in this document in which, in order~~ U.S. Pat. No. 5,012,512. The solution described in the present invention to shorten the time expended~~, not only is request~~ is not only capable of displaying and processing the requested data of a subscriber ~~capable of being displayed and processed on a~~ on the screen of the operator~~,~~ but also data which the operator ~~has~~ obtained on request

30   from one or more ~~data bases.~~ databases.

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US A U.S. Pat. No. 5,469,504 describes a call distributor system having a host computer together the with a database which is physically connected to all the switching offices, and serves as a system for switching the data between the individual switching offices to which operators of an operator service are

5    connected. In this the system, a call link is firstly first offered to an operator via the local switching office, if the operator is not suitably located for this call, this call is transferred to a further operator using the host computer, this transfer being made using a special protocol, referred to in the document as "intertandem protocol". protocol." This protocol uses a DTMF method. The expenditure incurred as a

10   result of the use of the host computer in conjunction with the X.25 interface protocol, described in the document U.S. Pat. No. 5,469,504, and the intertandem protocol is, however, considered to be considered as disadvantageous.

SUMMARY OF THE INVENTION

An advantage of the present One object of the invention is accordingly to

15   permit that it permits network-wide management of all the operators or consoles of the operator system. For example, a central switching office-, referred to as master office should, would have the information indicating which operators are free or busy or out of service so that, for example, an enquiry an inquiry of a network subscriber relating to a telephone number, address, etc., can quickly be passed on to

20   an operator of at a remote switching office if. If no operator of at the local switching office is available. This should, thus permit, permits network-wide call distribution in terms of the operators.

This object is achieved with a method of the type mentioned at the beginning in which, according to the advantage is achieved by the present

25   invention. In the present invention, after successful loging logging on, a request for remote logging on to a central master office is transmitted, a call number or call number table of virtual operators located in the master office is transmitted from the peripheral line trunk group to the operator, the operator initiates a voice link to a virtual operator using the call number or call number table, and, after the call link

30   has been successfully set up, the request for remote logging on is transmitted from

15

the home switching office to the master office ~~by means of~~ <u>via</u> inter-office signaling, and is conveyed in ~~said~~ <u>the</u> master office to its coordination processor~~,~~ ~~log~~. <u>Log</u> on confirmation data and data which is specific to the operator service is then loaded from the coordination processor and/or a peripheral line trunk group of

5    the master office into the peripheral line trunk group of the operator in the home switching office and from there into the operator's terminal, and a status report of the operator is transmitted via a data channel to the peripheral line trunk group of the home switching office and from there via inter-office signaling to the coordination processor of the master office.

10         ~~Thanks to~~ <u>Because of</u> the <u>present</u> invention, an operator system which operates on a network-wide basis and ~~is~~ managed centrally can be provided. <u>The present invention is more</u> ~~It can be~~ expedient~~,~~ because it provides a saving in resources~~,~~ if the local logging on to the home switching office is terminated after the remote logging on of the operator to the master office.

15         In order to facilitate the operator work, there is <u>a</u> provision that the status report is not output until ~~after expiry~~ <u>the expiration</u> of a protection time which follows the successful remote logging on.

         It is expedient if the data to be transmitted is transmitted from the peripheral line trunk group of the master office to the operator via a data channel other than

20    the voice channel, this constituting the customary possibility for the transmission of data, which is also provided in the network in accordance with regulations.

         Because~~, however, on the other hand,~~ a voice link is set up in accordance with the <u>present</u> invention, it may also be expedient if data ~~to be transmitted~~ is transmitted via a voice channel set up between the operator and a virtual operator

25    using a data link program.

         The <u>present</u> invention is particularly suitable for application in an ISDN network, the data channel being the D channel, and the voice channels being B channels.

Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

## BRIEF DESCRIPTION OF THE FIGURES

5 Figure 1 shows ~~The invention, together with further advantages, is explained in more detail below with reference to an exemplary embodiment and by means of the drawing. The latter shows in its single figure~~ the basic structure of a network with two switching offices ~~illustrated~~ and an operator service.

## DETAILED DESCRIPTION OF THE INVENTION

10 At the top left of ~~the figure~~ Figure 1 there are a number of subscribers OP1, OP2 ... of an operator service OPS, details of the hierarchy within the operators OP1, OP2 ... are not being given here. All the operators OP1, OP2 ..., are connected into the network together with customary network subscribers TEI of a telecommunications network NET~~; said~~. The network ~~being~~ in the present case is

15 an ISDN network and the connection ~~being therefore~~ is made via an $S_0$ interface, ~~ie.~~ i.e., in each case to a network terminal NTE ~~here~~.

The first switching office, VS1, of the network is shown top right and it has, in a manner known per se, a switching matrix, SNE, and periphery line trunk groups LTG, LTC connected thereto. A coordination processor, COP, is provided

20 for controlling the switching office VS1, ~~especially~~ including the switching matrix SNE. Each peripheral line trunk group LTG, LTC also contains, in a known manner, a group processor GRP, and in this ~~exemplary~~ embodiment concentrators DLU (Digital Line Unit) are connected to each peripheral line trunk group via a $U_{k0}$ interface. Each of these concentrators DLU ~~also has a plurality of~~ have inputs for

25 the network terminals already mentioned above. In the case of relatively large switching offices, up to 512 peripheral line trunk groups LTG, LTC can be connected to a switching matrix SNE, and usually two concentrators DLU are connected to each line trunk group LTG. The peripheral line trunk groups LTG, LTC each also contain, in a known manner, ~~what is referred to as~~ a group switch

30 GSI.

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In a peripheral line trunk group LTG, LTC, various programs are executed which are supported by the group processor GRP, for example, the greater part of the connection setup, the signaling, the code reception etc., takes place here. In general, 70% of the connection setup is carried out in the peripheral line trunk

5    groups, whereas ~~especially~~ routing functions are assigned to the coordination processor COP.

The switching office <u>can</u> also ~~comprises~~ <u>include</u> an operation and maintenance system OMS with an operation and maintenance terminal OMT at which monitoring personnel can continuously monitor the state of the switching

10   office and ~~detects~~ <u>detect</u> faults.

The operators OP1, OP2 ... of the operator service usually have workstations with personal computers which contain ISDN cards and special software as well as headsets for the operators. The terminals of the operators are also called "consoles" in the following. The operators OP1, OP2, ... can transmit

15   messages to the switching office, ~~especially to~~ <u>including</u> the peripheral line trunk groups LTG~~, these.~~ <u>These</u> messages ~~being~~ <u>are</u> processed in the group processor GRP and lead to <u>further</u> corresponding ~~further~~ measures, for example a connection setup. The messages are transmitted in a point-to-point configuration with a permanently active layer 2 and in the D channel in an ISDN network.

20   Bottom right in ~~the drawing~~ <u>Figure 1</u> there is a further switching office VS2 which is associated with the network NET and whose structure corresponds basically to the first switching office VS1, but the second switching office VS2 serves as a master office of the operator service. ~~Of course,~~ <u>It can be appreciated that</u> a large number of other switching offices (not shown here) may also be

25   provided as a function of the size of the network, as indicated ~~here only~~ <u>in Figure 1</u> by two boxes VS3, VS4.

Each of these switching offices can be assigned operators $OP_x$, $OP_y$ again.

Each switching office VS1, VS2,... has a particular peripheral line trunk group LTC for fast data links which permit data exchange, within the scope of

30   inter-office signaling, for example in the ISUP signaling system (see ~~for example~~ P.

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Bocker, ISDN –Digitale Netze für Sprach-, Text-, Daten-, Video –and
Multimediakommunikation [Digital("Digital Networks for Call, Text, Data, Video
and Multimedia communication] communication"), 4th Edition, Springer
[Publishing house](Publishing house), Section 6.2.9, "Zwischenamtsignalisierung"

5    [Inter-("Inter-office signaling]) signaling"), with other such line trunk groups via
rapid data links, for example optical fiber lines.

It is essential to In the present invention that, any operator OP1, OP2, ... can
log on to a remote office, here the master office VS2. The present invention now
provides a method which is described below in more detail.

10   An operator OP1 firstly first logs on to his home switching office VS1 by
using a password and an ID number –which corresponds to the prior art. After
successful logging on, the console of the operator OP1 transmits a request for
remote logging on in the master office VS2 to the associated peripheral line trunk
group LTG of the home switching office VS1 in the D channel by means of via a

15   data link. This request then causes a call number or a call number table of virtual
operators VO1, VO2 to be transmitted to the console of the operator OP1.

Such virtual operators are configured in at least one peripheral line trunk
group LTG of the master office VS2, and are required to be able to set up an actual
call link.

20   The console of the operator OP1 then uses the call number or one of the
possible call numbers in order to set up a call link, i.e., a link in a B channel to a
virtual operator VO1. After successful setting up of this link, the request for remote
logging is transmitted via means of inter-office signaling from the switching office
of the operator OP1 to the master office VS2 and conveyed to the coordination

25   processor COP in the said master office VS2. In the next step, what are referred to
as "log "log on response" data and call number data, (for example, system clock
time and date, the hierarchical structure, personal data and different rights, for
example i.e., access possibilities to statistical data, etc. is etc.) are loaded from the
coordination processor COP and/or a peripheral line trunk group LTG of the master

30   office VS2 into the peripheral line trunk group LTG of the operator OP1 –in the

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home switching office VS1-, or from here into the operator console. This can be carried out via a data channel (D channel) or via the existing call link in a B channel using a data link program. After determination of this data transmission, the "log-off" is initiated with respect to the "local" log -on between the operator

5   OP1 and home switching office VS1.

However, if the voice link has not been established in the B channel between the operator console and the virtual operator VOP, the next call number of a virtual operator is obtained from the aforesaid call number table by the console and a new link attempt is started.

10   After a successful log -on in the master office VS2 takes place, expediently soon after a certain protection time has expired, which is implemented by means of via a post-call timer, a status message (operator status message), in this case "idle" is transmitted from the console of the operator OP1 via a data channel link to the peripheral line trunk group LTG of the home switching office VS1. From here, the

15   status message (here "idle") is transmitted to the master office VS2 using inter-office signaling, for example, ISUP as mentioned, and transmitted here to the coordination processor COP. The aforesaid protection time of, for example, 20 to 60 s, permits the line of the operator OP1 still to appear seized or busy, and is intended to prevent the operator OP1 from being "overloaded" by an enquiry

20   virtually simultaneously with its log -on.

Status changes of the operator OP1, for example such as, from "idle" to "busy", are handled in the same way and are therefore known in the master office VS2.

The present invention makes possible, in the manner described above, a

25   network-wide operator service system in which, for example, operators of remote offices can be integrated into the work of this system by virtue of the central management of the system carried out at an office (switching office).

Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made

20

thereto without departing from the spirit and scope of the invention as set forth in the hereafter appended claims.

~~Abstract~~

~~Method for transmitting data to members of an operator service~~

5 ABSTRACT OF THE DISCLOSURE

A method for managing operators of an operator service, the network having ~~a plurality of~~ switching offices ~~(VS1, VS2, ...)~~, in which the operator logs on to a central master office ~~(VS2)~~ by virtue of the fact that ~~said~~ the operator initiates a call linked to a virtual operator in the master office ~~(VO1)~~ using a call

10 number table, the request for remote logging on is transmitted from the home switching office ~~(VS1)~~ to the master office ~~(VS2)~~ by means of inter-office signaling after the call link has been set up, and that data which is specific to the operator service is then transmitted from the coordination processor ~~(COP)~~ and/or a peripheral line trunk group ~~(LTG)~~ of the master office ~~(VS2)~~ to the operator ~~(OP1)~~

15 and loaded into its terminal.

~~Fig.~~

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BOX  PCT

IN THE UNITED STATES ELECTED/DESIGNATED OFFICE

OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER THE PATENT COOPERATION TREATY-CHAPTER II

5

| | | |
|---|---|---|
| APPLICANT: | Wahid Adli | DOCKET NO: 112740-343 |
| SERIAL NO: | | GROUP ART UNIT: |
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10  INTERNATIONAL APPLICATION NO:     PCT/DE00/00979

INTERNATIONAL FILING DATE:        31 March 2000

INVENTION:        METHOD FOR TRANSMITTING DATA BETWEEN
MEMBERS OF AN OPERATOR SERVICE

15  Assistant Commissioner for Patents,
Washington, D.C. 20231

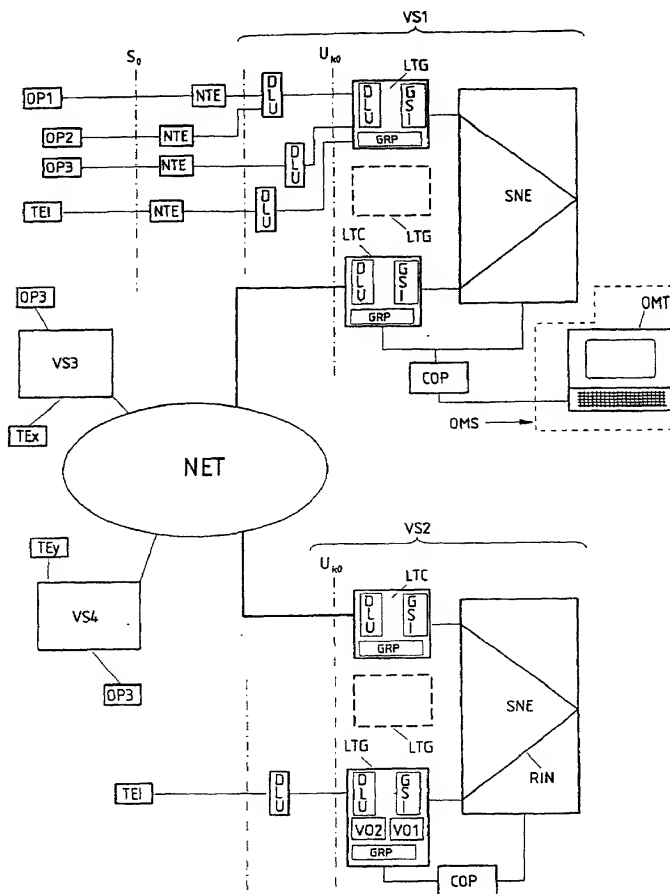## SUBMISSION OF DRAWINGS

20        Applicant herewith submits one sheet (Fig. 1) of drawings for the above-

referenced PCT application.

Respectfully submitted,

_____ (Reg. No. 39,056)

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-1-

Description

Method for transmitting data to members of an operator
service

5

The invention relates to a method for managing
operators of a telecommunications network which are
members of an operator service, the network having a
plurality of switching offices, and, after an operator
10  has logged on to its home switching office in a data
channel, the operator logs on to the peripheral line
trunk group (LTG) of the operator via the data channel.

What are referred to as operator services which
15  constitute an essential link between the customers of
the network and the network operators are required in
telephone networks. Such an operator service has
diverse functions, one main function being to
distribute information to subscribers on request. For
20  example, an operator may call an operator service in an
ISDN network and request information. The respective
operator can then, if necessary, access a database, for
example, in which case information relating to another
subscriber is then provided to him on the screen of a
25  PC. After a connection request by the operator, which
can be effected, for example, by pressing a push-button
key, the operator is connected to the searched-for
subscriber. The operator is then connected back to the
originating subscriber and to the searched-for
30  subscriber and can optionally speak to one of the
subscribers. Signaling on the D channel then takes
place again at the push of a further push-button key,
and the connection situations of the two subscribers of
the peripheral line connecting group are indicated, and
35  the call channels are connected via the switching
matrix so that ultimately there is a direct link
between the two subscribers. The example described here

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is intended to represent just one of the possibilities
or functions of an operator service.

Large networks for a large number of subscribers require a correspondingly large number of operator service systems with a large number of usually hierarchically structured system subscribers
5  (operators), such as, for example, as in the case of the Applicant's system which is called ADMOSS. Messages from the operators to the switching office are sent, as already mentioned, in the D channel, in an ISDN network, specifically in a point-to-point configuration
10 with a permanently active layer 2 of the OSI layer model. The messages are transmitted in an ISDN network with the support of the D channel protocol, for which reason reference is also made to the Blue Book, Volume VI - Fascicle VI. 11, "Digital Subscribe Signaling
15 System No. 1 (DSS1), Network Layer, User-Network Management", Recommendations Q. 930 - Q. 940, in particular to recommendation Q. 931.

The operators are usually located in what are referred
20 to as call centers, and a respective device, composed of a terminal, PC, screen etc. and referred to below, as is the usual practice, as "Console" is directly connected to the system and/or can be connected to the local switching office. However, the need to use
25 decentralized operators, for example within the context of homework, is being increasingly felt, but a single central management system for the operators in the network should still be possible.

30 Objects and problems of operators are also described in a method of the type mentioned at the beginning in US-A-5 012 512, a solution being described in this document in which, in order to shorten the time expended, not only is request data of a subscriber
35 capable of being displayed and processed on a screen of the operator but also data which the operator has obtained on request from one or more data bases.

US-A-5,469,504 describes a call distributor system
having a host computer together the database which is
physically connected to all the switching offices, and
serves as a system for switching the data between the
5   individual

switching offices to which operators of an operator service are connected. In this system, a call link is firstly offered to an operator via the local switching office, if the operator is not suitably located for
5    this call, this call is transferred to a further operator using the host computer, this transfer being made using a special protocol, referred to in the document as "intertandem protocol". This protocol uses a DTMF method. The expenditure incurred as a result of
10   the use of the host computer in conjunction with the X.25 interface protocol described in the document and the intertandem protocol is, however, to be considered as disadvantageous.

15   One object of the invention is accordingly to permit network-wide management of all the operators or consoles of the operator system. For example, a central switching office - referred to as master office - should have the information indicating which operators
20   are free or busy or out of service so that, for example, an enquiry of a network subscriber relating to a telephone number, address etc. can quickly be passed on to an operator of a remote switching office if no operator of the local switching office is available.
25   This should thus permit network-wide call distribution in terms of the operators.

This object is achieved with a method of the type mentioned at the beginning in which, according to the
30   invention, after successful loging on, a request for remote logging on to a central master office is transmitted, a call number or call number table of virtual operators located in the master office is transmitted from the peripheral line trunk group to the
35   operator, the operator initiates a voice link to a virtual operator using the call number or call number table, and after the call link has been successfully set up, the request for remote logging on is

transmitted from the home switching office to the
master office by means of inter-office signaling, and
is conveyed in said master office to its coordination
processor, log-on confirmation data and data which is
5    specific to the operator service is then loaded from
the coordination processor and/or a peripheral line
trunk group of the master office into the peripheral
line trunk group of the operator in the home switching
office and from there into the operator's terminal, and
10   a status report of the operator is transmitted via a
data channel to the peripheral line trunk group of the
home switching office and from there via inter-office
signaling to the coordination processor of the master
office.

15

Thanks to the invention, an operator system which
operates on a network-wide basis and is managed
centrally can be provided.

20   It can be expedient, because it provides a saving in
resources, if the local logging on to the home
switching office is terminated after the remote logging
on of the operator to the master office.

25   In order to facilitate the operator work, there is
provision that the status report is not output until
after expiry of a protection time which follows the
successful remote logging on.

30   It is expedient if the data to be transmitted is
transmitted from the peripheral line trunk group of the
master office to the operator via a data channel other
than the voice channel, this constituting the customary
possibility for the transmission of data, which is also
35   provided in the network in accordance with regulations.

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Because, however, on the other hand, a voice link is
set up in accordance with the invention, it may also be
expedient if data to be transmitted is transmitted via
a voice channel set up between the operator and a
5  virtual operator using a data link program.

The invention is particularly suitable for application in an ISDN network, the data channel being the D channel, and the voice channels being B channels.

5  The invention, together with further advantages, is explained in more detail below with reference to an exemplary embodiment and by means of the drawing. The latter shows in its single figure the basic structure of a network with two switching offices illustrated and
10  an operator service.

At the top left of the figure there are a number of subscribers OP1, OP2 ... of an operator service OPS, details of the hierarchy within the operators OP1, OP2
15  ... not being given here. All the operators OP1, OP2... are connected into the network together with customary network subscribers TEI of a telecommunications network NET; said network being in the present case an ISDN network and the connection being therefore made via an
20  $S_0$ interface, ie. in each case to a network terminal NTE here.

The first switching office VS1 of the network is shown top right and it has, in a manner known per se, a
25  switching matrix SNE and periphery line trunk groups LTG, LTC connected thereto. A coordination processor COP is provided for controlling the switching office VS1, especially the switching matrix SNE. Each peripheral line trunk group LTG, LTC also contains, in
30  a known manner, a group processor GRP, and in this exemplary embodiment concentrators DLU (Digital Line Unit) are connected to each peripheral line trunk group via a $U_{k0}$ interface. Each of these concentrators DLU also has a plurality of inputs for the network
35  terminals already mentioned above. In the case of relatively large switching offices, up to 512 peripheral line trunk groups LTG, LTC can be connected to a switching matrix SNE, and usually two

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concentrators DLU are connected to each line trunk group LTG. The peripheral line trunk groups LTG, LTC

each also contain, in a known manner, what is referred
to as a group switch GSI.

In a peripheral line trunk group LTG, LTC, various
5    programs are executed which are supported by the group
processor GRP, for example the greater part of the
connection setup, the signaling, the code reception
etc. takes place here. In general, 70% of the
connection setup is carried out in the peripheral line
10   trunk groups, whereas especially routing functions are
assigned to the coordination processor COP.

The switching office also comprises an operation and
maintenance system OMS with an operation and
15   maintenance terminal OMT at which monitoring personnel
can continuously monitor the state of the switching
office and detects faults.

The operators OP1, OP2 ... of the operator service
20   usually have workstations with personal computers which
contain ISDN cards and special software as well as
headsets for the operators. The terminals of the
operators are also called "consoles" in the following.
The operators OP1, OP2, ... can transmit messages to
25   the switching office, especially to the peripheral line
trunk groups LTG, these messages being processed in the
group processor GRP and lead to corresponding further
measures, for example a connection setup. The messages
are transmitted in a point-to-point configuration with
30   a permanently active layer 2 and in the D channel in an
ISDN network.

Bottom right in the drawing there is a further
switching office VS2 which is associated with the
35   network NET and whose structure corresponds basically
to the first switching office VS1, but the second
switching office VS2 serves as a master office of the
operator service. Of course, a large number of

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other switching offices (not shown here) may also be
provided as a function of the size of the network, as
indicated here only by two boxes VS3, VS4.

Each of these switching offices can be assigned operators OP$_x$, OP$_y$ again.

Each switching office VS1, VS2,... has a particular
5  peripheral line trunk group LTC for fast data links
which permit data exchange, within the scope of inter-
office signaling, for example in the ISUP signaling
system (see for example P. Bocker, ISDN - Digitale
Netze für Sprach-, Text-, Daten-, Video- and
10  Multimediakommunikation [Digital Networks for Call,
Text, Data, Video and Multimedia communication], 4th
Edition, Springer [Publishing house], Section 6.2.9,
"Zwischenamtsignalisierung" [Inter-office signaling]),
with other such line trunk groups via rapid data links,
15  for example optical fiber lines.

It is essential to the invention that any operator OP1,
OP2, ... can log on to a remote office, here the master
office VS2. The invention now provides a method which
20  is described below in more detail.

An operator OP1 firstly logs on to his home switching
office VS1 by using a password and an ID number - which
corresponds to the prior art. After successful logging
25  on, the console of the operator OP1 transmits a request
for remote logging on in the master office VS2 to the
associated peripheral line trunk group LTG of the home
switching office VS1 in the D channel by means of a
data link. This request then causes a call number or a
30  call number table of virtual operators VO1, VO2 to be
transmitted to the console of the operator OP1.

Such virtual operators are configured in at least one
peripheral line trunk group LTG of the master office
35  VS2, and are required to be able to set up an actual
call link.

The console of the operator OP1 then uses the call
number or one of the possible call numbers in order to
set up a call link,

i.e. a link in a B channel to a virtual operator VO1.
After successful setting up of this link, the request
for remote logging is transmitted via means of inter-
office signaling from the switching office of the
5  operator OP1 to the master office VS2 and conveyed to
the coordination processor COP in the said master
office VS2. In the next step, what are referred to as
"log-on response" data and call number data, for
example system clock time and date, the hierarchical
10 structure, personal data and different rights, for
example access possibilities to statistical data, etc.
is loaded from the coordination processor COP and/or a
peripheral line trunk group LTG of the master office
VS2 into the peripheral line trunk group LTG of the
15 operator OP1 - in the home switching office VS1 - or
from here into the operator console. This can be
carried out via a data channel (D channel) or via the
existing call link in a B channel using a data link
program. After determination of this data transmission,
20 the "log-off" is initiated with respect to the "local"
log-on between the operator OP1 and home switching
office VS1.

However, if the voice link has not been established in
25 the B channel between the operator console and the
virtual operator VOP, the next call number of a virtual
operator is obtained from the aforesaid call number
table by the console and a new link attempt is started.

30 After a successful log-on in the master office VS2
takes place, expediently after a certain protection
time has expired, which is implemented by means of a
post-call timer, a status message (operator status
message), in this case "idle" is transmitted from the
35 console of the operator OP1 via a data channel link to
the peripheral line trunk group LTG of the home
switching office VS1. From here, the status message

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(here "idle") is transmitted to the master office VS2
using inter-office signaling, for example ISUP as
mentioned, and transmitted here to the coordination
processor COP. The aforesaid protection time of, for
5   example, 20 to 60 s permits the line of the operator
OP1 still to appear seized or busy, and is intended to
prevent the operator OP1 being "overloaded" by an
enquiry virtually simultaneously with its log-on.

10  Status changes of the operator OP1, for example from
"idle" to "busy" are handled in the same way and are
therefore known in the master office VS2.

The invention makes possible, in the manner described
15  above, a network-wide operator service system in which,
for example, operators of remote offices can be
integrated into the work of this system by virtue of
the central management of the system carried out at an
office (switching office).

Patent Claims

1. A method for managing operators of a
telecommunications network (NET), which are members of
5 an operator service, the network having a plurality of
switching offices (VS1, VS2, ...), and, after an
operator (OP1) has logged on to its home switching
office (VS1) in a data channel, the operator (OP1) logs
on to the peripheral line trunk group (LTG) of the
10 operator via the data channel, characterized in that,
after successful logging on, a request for remote
logging on to a central master office (VS2) is
transmitted a call number or call number table of
virtual operators (VO1, VO2) located in the master
15 office (VS2) is transmitted from the peripheral line
trunk group (LTG) to the operator (OP1),
the operator (OP1) initiates a voice link to a virtual
operator (VO1) using the call number or call number
table, and after the call link has been successfully
20 set up, the request for remote logging on is
transmitted from the home switching office (VS1) to the
master office (VS2) by means of inter-office signaling,
and is conveyed in said master office (VS2) to its
coordination processor (COP),
25 log-on confirmation data and data which is specific to
the operator service is then loaded from the
coordination processor (COP) and/or a peripheral line
trunk group (LTG) of the master office (VS2) into the
peripheral line trunk group (LTG) of the operator (OP1)
30 in the home switching office (VS1) and from there into
the operator's terminal,
and a status report of the operator (OP1) is
transmitted via a data channel to the peripheral line
trunk group (LTG) of the home switching office and from
35 there via inter-office signaling to the coordination
processor (COP) of the master office (VS2).

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2.   The method as claimed in claim 1, characterized in
that, after the remote logging on of the operator (OP1)
to the master office (VS2), the local logging on to the
home switching office (VS1) is terminated.

5

3.   The   method   as   claimed   in   claim   1   or   2,
characterized in that the status report is not output
until after a protection time following the successful
remote logging on has expired.

10

4.   The method as claimed in one of claims 1 to 3,
characterized   in   that   the   data   which   is   to   be
transmitted is transmitted from a peripheral line trunk
group (LTG) of the master office (VS2) to the operator
15   (OP1) via a channel other than the voice channel.

5.   The method as claimed in one of claims 1 to 3,
characterized in that the data to be transmitted is
transmitted via a voice channel which has been set up
20   between the operator (OP1) and a virtual operator (VO1,
VO2) using a data link program.

6.   The method as claimed in one of claims 1 to 5, in
which   the   communications   network   (NET)   is   an   ISDN
25   network,   the   data   channel   is   the   D   channel   and   the
voice channels are B channels.

7.   The method as claimed in claim 6, characterized in
that   the   inter-office   signaling   system   is   an   ISUP
30   signaling system.

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# Declaration ⬤ Power of Attorney For ⬤ent Application
## *Erklärung Für Patentanmeldungen Mit Vollmacht*
### German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

## Verfahren zum Uebertragen von Daten an Mitglieder eines Operatorservice

## Method of transmitting data to members of an operator service

deren Beschreibung

the specification of which

(zutreffendes ankreuzen)
☐ hier beigefügt ist.
☒ am ___31.03.2000___ als
PCT internationale Anmeldung
PCT Anmeldungsnummer _____PCT/DE00/00979
eingereicht wurde und am _____
abgeändert wurde (falls tatsächlich abgeändert).

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☐ is attached hereto.
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and was amended on _____
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Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

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IDNR: 2590 / V: 99-1.00 / B:Val

# German Language Declaration

Prior foreign appplications
Priorität beansprucht

Priority Claimed

| | | | | |
|---|---|---|---|---|
| **19914795.7** (Number) (Nummer) | **DE** (Country) (Land) | **31.03.1999** (Day Month Year Filed) (Tag Monat Jahr eingereicht) | ☒ Yes Ja | ☐ No Nein |
| **19917077.0** (Number) (Nummer) | **DE** (Country) (Land) | **15.04.1999** (Day Month Year Filed) (Tag Monat Jahr eingereicht) | ☒ Yes Ja | ☐ No Nein |
| (Number) (Nummer) | (Country) (Land) | (Day Month Year Filed) (Tag Monat Jahr eingereicht) | ☐ Yes Ja | ☐ No Nein |

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| | | | |
|---|---|---|---|
| **PCT/DE00/00979** (Application Serial No.) (Anmeldeseriennummer) | **31.03.2000** (Filing Date D, M, Y) (Anmeldedatum T, M, J) | **anhängig** (Status) (patentiert, anhängig, aufgegeben) | **pending** (Status) (patented, pending, abandoned) |
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| Unterschrift des Erfinders        Datum<br>X Wahid Adli     X 27.9.01 | Inventor's signature        Date |
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